CLAIMS

1. An electricity-generating installation (10) on board a motor vehicle, of the type equipped with a fuel-cell stack (12) provided with at least one orifice (28) for evacuation of residual gases, which are composed mainly of air and water vapor and which are discharged into an evacuation conduit (30, 36) in which there is disposed a condenser (38) that liquefies the water vapor, and in which a compressor (32) is interposed upstream from the condenser (38), the liquid water being diverted from the evacuation conduit (36) to a liquid water circuit (62),

characterized in that the compressor (32) compresses the residual gases in such a way that the dew point temperature of the water vapor is higher than the temperature of the condenser (38).

2. An installation (10) according to the preceding claim, characterized in that it is provided with a turbine (34), which is interposed in the evacuation conduit (42) downstream from the condenser (38) and which drives the compressor (32).

3. An installation (10) according to the preceding claim, characterized in that the turbine (34) and the compressor (32) comprise a turbine compressor (40).

4. An installation (10) according to one of the preceding claims, characterized in that it includes a reformer (48), which feeds the fuel-cell stack (12) with fuel and which discharges the exhaust gases under pressure and injects them into the turbine (34).

5. A method for electricity generation (10) on board a motor vehicle, of the type equipped with a fuel-cell stack (12), the method operating:

- by liquefying the water vapor by a condenser (38) disposed in an evacuation conduit (30, 36) into which the residual gases are discharged via at least one orifice (28) for evacuation of the residual gases, which are composed mainly of air and water vapor;

- by diverting the liquid water from the evacuation conduit (36) to a liquid water circuit (62); and

- by compressing the residual gases by the compressor (32) in such a way that the dew point temperature of the water vapor is higher than the temperature of the condenser (38).

6. A vehicle equipped with an electricity-generating installation (10) according to one of claims 1 to 4 or using a method according to claim 5.